CLINICAL EVALUATION OF BONE SCINTIGRAPHY IN APICAL LUNG TUMOR

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With the advance of ^{99m}Tc-phosphorous compounds and whole-body imaging procedure, the bone scintigraphy has become one of the most useful technique for the detection of bone metastases. In 114 cases of lung cancer (excluding apical lung tumor), forty-five cases or 40% demonstrated bone metastases and false-negative scintigraphies were obtained in only two cases(4%).

In this study, bone scintigraphy with ^{99m}Tc-phosphorous compounds were performed on 10 patients with apical lung tumor, and compared with skeletal roentgenogram. In all cases, destruction of ribs were observed on roentgenogram, and four cases extended into the adjacent vertebral bodies. A comparison of the sensitivity of detection of bone disease by the bone scintigraphy and skeletal roentgenogram in apical lung tumor revealed a higher yield from the roentgenogram (60%) than from the bone scintigraphy (40%). Especially, in four patients with destruction of vertebral bodies which were detected by the roentgenogram, three patients had not demonstrated positive findings by bone scintigraphy.

It is not clearly defined that bone scintigraphy can also be utilized in demonstrating bone involvement by direct spread of adjacent tumor from soft tissues. But, the result of our study suggested that skeletal roentgenogram of the apical region of lung was more useful than bone scintigraphy in detection of the precence of bone involvement.

CLINICAL SIGNIFICANCE OF EQUIVOCAL ACCUMULATIONS FOUND ON THE WHOLE BODY BONE SCINTIGRAM WITH Tc-99m-PHOSPHATE COMPOUNDS.

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From Jan. 1975 to Dec. 1976, 412 patients were examined by the bone scanning with Tc-99m-phosphate compounds for metastatic bone lesions. Of these patients, 112 were found to have equivocal accumulations in 135 areas. These 112 patients were carefully surveyed through their clinical records, autopsy findings, X-ray pictures etc., and finally 69 areas of 58 patients were selected for this study. The remaining 54 patients were discarded because of unsatisfactory information.

Among these 58 patients, 23 were proved by autopsy, 2 by histological examination on the resected specimens, and the remaining 33 by over 1.5 year-follow-up studies including periodical X-ray examinations.

Of these 69 areas of equivocal accumulation, 28 were finally judged as being metastases. The name of area and the corresponding number are as follows (parentheses indicate the number of metastases): skull -- 1 (0), Mandible -- 2 (0), cervical vertebrae -- 4 (2), thoracic vertebrae -- 13 (6), lumbar vertebrae -- 18 (4), pelvic bones -- 7 (4), sacroiliac joint -- 4 (3), sternum -- 1 (0), ribs -- 12 (6), sternoclavicular joint -- 2 (0), knee -- 2 (1), femur -- 3 (2). Overall ratio for the metastases was found to be 40.6 % in this series.

As for the vertebrae, equivocal accumulations were noted in 35 areas of 32 patients. In 12 out of 32 patients, the equivocal accumulations were found to be metastases. The remaining 20 were composed of 14 cases of degenerative changes, one case each of osteoporosis, collapse of the vertebral body, myelofibrosis, and 3 cases of possible over evaluation.

Therefore, when equivocal accumulations are noted, periodical investigations including scintiscanning and X-ray examination are important for early detection of bone metastases.